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Amendments to the Claims

1. (Currently amended) An apparatus cooling a metallic workpiece, the apparatus comprising:
a support surface for supporting the workpiece in an operative position;
a source of a cooling gas and an additional coolant, said cooling gas comprising one or more constituent gases that are gases at ambient conditions and said additional coolant comprising one or more constituents that are liquid at ambient conditions; and
a conduit system directing the cooling gas and additional coolant from the source and having a plurality of outlets positioned to discharge a mixture of the cooling gas and the additional coolant to impinge the workpiece in the operative position;
a motor; and
a linkage coupling the motor to at least one of the support surface the conduit system and driven by the motor to produce oscillation of the workpiece relative to the outlets.
2. (Original) The apparatus of claim 1 wherein:
the source comprises a first source of the cooling gas and a second source of the additional coolant.
3. (Previously presented) The apparatus of claim 1 wherein:
said additional coolant one or more constituents include water; and
said water in said mixture has a mass flow rate of 5-20% of a mass flow rate of said cooling gas.
4. (Previously presented) The apparatus of claim 3 wherein:
a major portion of said water in said mixture is steam.
5. (Previously presented) The apparatus of claim 3 wherein:
a major portion of said water in said mixture is in droplet form.
6. (Original) The apparatus of claim 1 wherein:

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a said support surface is provided by surface portions of a plurality of vertically-extending rods.

7. (Canceled)

8. (Canceled)

9. (Currently amended) An apparatus for cooling a metallic workpiece, said workpiece having a cross-section including a first portion that is substantially thicker and more massive than a second portion that is relatively thinner and less massive, said apparatus comprising:

a fixture for supporting the workpiece;
a source of a mixture of a compressed cooling gas containing liquid droplets for quenching the work piece; and
a set of tubes for delivering and directing the compressed cooling gas onto said workpiece for cooling, so that said compressed cooling gas flows onto said first portion that is substantially thicker and more massive and away from said second portion that is relatively thinner and less massive; and

means for providing relative movement of the workpiece and tubes during the cooling.

10. (Original) The apparatus of claim 9 wherein the source includes:

at least a first gas source of said cooling gas; and

means for adding said liquid droplets to the cooling gas along a gas flowpath between the first gas source and the workpiece.

11-25. (Canceled)

26. (Original) An apparatus for cooling a heat-treated metallic workpiece, said apparatus comprising:

a fixture for supporting the workpiece;

a source of a cooling gas for quenching the workpiece;

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a conduit system delivering the cooling gas from the source and directing the cooling gas onto the workpiece so as to cool the workpiece; and

means for moving the workpiece relative to the conduit system during the cooling of the workpiece.

27. (Original) The apparatus of claim 26 wherein the means for moving produces oscillation of the workpiece relative to the conduit system.

28. (Original) The apparatus of claim 26 wherein the means for moving comprises:
an electric motor; and
a mechanical linkage coupling the motor to the fixture so that continuous rotation of shaft of the motor in a first direction produces oscillation of the fixture.

29. (New) The apparatus of claim 26 wherein the means for moving comprises:
an electric motor; and
a mechanical linkage coupling the motor to the fixture so that rotation of the motor drives a rotary oscillation of the workpiece.

30. (New) The apparatus of claim 29 further comprising at least one motor coupled to the conduit system to bring the conduit system into an operative position relative to the workpiece.

31. (New) The apparatus of claim 26 further comprising at least one motor coupled to the conduit system to bring the conduit system into an operative position relative to the workpiece.

32. (New) The apparatus of claim 1 wherein the motor is a first motor and one or more second motors are coupled to the conduit system by lead screws to bring the outlets into an operative position relative to the workpiece.

33. (New) An apparatus for cooling a heat-treated metallic workpiece, said apparatus comprising:

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a fixture for supporting the workpiece;
a source of a cooling gas for quenching the workpiece;
a conduit system delivering the cooling gas from the source and directing the cooling gas onto the workpiece so as to cool the workpiece; and
first means for positioning a first plurality of outlets of the conduit system relative to a second plurality of outlets of the conduit system the first and second pluralities of outlets being essentially on opposite sides of the workpiece; and
second means for moving the workpiece relative to the conduit system during the cooling of the workpiece.

34. (New) The apparatus of claim 33 wherein the first means comprises at least one motor coupled to at least one lead screw.

35. (New) The apparatus of claim 34 wherein the second means comprises at least one additional motor and a linkage coupling the additional motor to produce rotary oscillation of the workpiece relative to at least one of the first and second pluralities of outlets.

36. (New) An apparatus cooling a metallic workpiece, the apparatus comprising:
a support surface for supporting the workpiece in an operative position;
a source of a cooling gas and an additional coolant, said cooling gas;
a conduit system directing the cooling gas and additional coolant from the source and having a plurality of outlets positioned to discharge the cooling gas to impinge the workpiece in the operative position;
a motor; and
a linkage coupling the motor to at least one of the support surface the conduit system and driven by the motor to produce oscillation of the workpiece relative to the outlets.

37. (New) The apparatus of claim 36 wherein the linkage couples the motor to the support surface.

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38. (New) The apparatus of claim 37 further comprising at least one additional motor coupled to the conduit system to bring the outlets into an operative position relative to the workpiece.

39. (New) The apparatus of claim 37 wherein the support surface comprises distal tip surfaces of a plurality of support rods.

40. (New) The apparatus of claim 36 wherein the support surface comprises distal tip surfaces of a plurality of support rods.

41. (New) The apparatus of claim 36 further comprising at least one additional motor coupled to the conduit system to bring the outlets into an operative position relative to the workpiece.